



The ESA's Planetary Science Archive (PSA)

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Abstract

The European Space Agency's Planetary Science Archive (PSA) makes all scientific and engineering data returned by ESA's planetary missions accessible to the world-wide scientific community. It offers online services incorporating search, preview, download, notification and delivery basket functionality.

The *long-term* preservation of data and knowledge from all of ESA's planetary missions is a core focus. All data provided within the Planetary Science Archive are therefore passed through a set of rigorous procedures designed to ensure the usability of the data not only at the time of ingestion, but also in the long-term, after the mission has closed and direct support from personnel involved with the mission can no longer be guaranteed.

The PSA currently holds data from Mars Express, Venus Express, SMART-1, Huygens, and Giotto, as well as several ground-based cometary observations. It will soon also provide the data collected by Rosetta until July 2006, and will be used for archiving on ExoMars, BepiColombo and the European contributions to Chandrayaan-1.

All PSA data are compliant with NASA's Planetary Data System (PDS) Standards for formatting and labelling files, including requirements for documentation and the structuring of data sets. The Standards are based around a 'Data Dictionary' containing a set of keywords that can be used to provide all of the information required to access and analyse the data. PSA maintain their own 'PSA Data Dictionary', built up from the PDS version and appending many of their own 'local data dictionaries' to specify information pertinent only to individual ESA missions. In addition, the PSA dictionary is used to define which keywords are required for each mission, instrument or sensor for which we have data

archived. PSA staff work in close collaboration with the PDS as the Standards continue to develop, in order to ensure compatibility and to maintain the scientific integrity of the data. The lessons learned from our work with the PDS are channelled into the definition of broader, more global standards and recommendations on archiving processes. This is done as part of the PSA's contribution to the IPDA (International Planetary Data Alliance).

Compliance with the conventions and requirements on each mission / instrument, and with the PDS Standards is verified using a validation tool developed by the PSA and distributed to all data providers, allowing them to syntactically validate their data at all phases in development of their pipelines, and before each delivery to the PSA. In future, a further more qualitative validation step is envisaged at the PSA to ensure correctness, completeness and cross correlation of all information, label and data content, within a data set.

This presentation will introduce the Planetary Science Archive and describe its data access interfaces. It will also discuss the data handling and validation procedures put in place to ensure the long-term usability, integrity and compatibility of our archives. An update on the scientific content of the archive will be given, as well as our development activities.

For further information about the ESA's Planetary Science Archive, please visit:

<http://www.rssd.esa.int/psa>